

What is claimed is:

- 1 1. A method of delivering solute to a target location, the  
2 method comprising the steps of:  
3 providing a crosslinked thermosensitive cellulose  
4 ether gel structure, wherein said gel structure is  
5 loaded with a solute; and  
6 positioning said loaded gel structure to said  
7 target location.
- 1 2. The method of claim 1, further comprising the step of  
2 increasing the temperature of said loaded gel structure  
3 from an initial temperature to a temperature at or  
4 above the transition temperature of said gel.
- 1 3. The method of claim 2, wherein said step of increasing  
2 the temperature of said loaded gel structure results in  
3 the deswelling of said gel and the release of said  
4 solute from said gel.
- 1 4. The method of claim 2, wherein said step of increasing  
2 the temperature of said loaded gel structure includes  
3 the step of exposing said loaded gel structure to a  
4 liquid having a temperature greater than said initial  
5 temperature of said loaded gel structure.

1 5. The method of claim 2, further including the step of  
2 coating said gel onto a substrate before said step of  
3 positioning said loaded gel structure to said target  
4 location.

1 6. The method of claim 5, wherein said substrate comprises  
2 a polymer material.

1 7. The method of claim 6, further comprising the steps of:

2  
3 providing functional groups on said polymer  
4 material before said step of coating said gel onto said  
5 substrate; and

6 adding a crosslinking material to said cellulose  
7 ether gel, said crosslinking material for reacting with  
8 said functional groups and thereby attaching said  
9 cellulose ether gel to said substrate.

1 8. The method of claim 7, wherein:

2 said polymer material is polyethylene  
3 terephthalate;

4 said functional groups comprise amine groups; and  
5 said linking material comprises divinylsulfone.

1 9. The method of claim 8, further comprising the step of  
2 exposing said polyethylene terephthalate to  
3 ethylenediamine to form said amine groups.

1 10. The method of claim 5, wherein:  
2       said target location is located within a mammalian  
3 body;  
4       said substrate is a medical device;  
5       said solute is a biologically active solute; and  
6       said step of increasing the temperature of said  
7 loaded gel structure is accomplished by exposing said  
8 loaded gel structure to an external liquid having a  
9 temperature greater than said initial temperature of  
10 said loaded gel structure.

1 11. The method of claim 5, wherein:  
2       said target location is located within a mammalian  
3 body;  
4       said substrate is a medical device;  
5       said solute is a biologically active solute; and  
6       said step of increasing the temperature of said  
7 loaded gel structure is accomplished by exposing said  
8 loaded gel structure to body temperature.

1 12. The method of claim 1, wherein said solute is loaded  
2 into said gel structure by forming a solution of said  
3 solute and placing said gel into said solution.

1 13. The method of claim 1, wherein said gel is formed in  
2 the presence of said solute.

1 14. The method of claim 1, further including the step of  
2 coating said gel onto a substrate before said step of  
3 positioning said loaded gel structure to said target  
4 location.

1 15. The method of claim 14, wherein said substrate  
2 comprises a polymer material.

1 16. The method of claim 2, wherein said step of increasing  
2 the temperature is accomplished with the use of  
3 resistance heating.

1 17. The method of claim 2, wherein said step of increasing  
2 the temperature is accomplished with the use of  
3 induction heating.